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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,309	03/12/2004	Toshihiko Watanabe	112857-467	8209

7590  
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12/20/2006

EXAMINER
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LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/799,309	WATANABE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Wai-Sing Louie	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-14,20-25,35 and 37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-14,20-25,35 and 37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4, 9-11, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al. (US 6,147,451) in view of Jackson et al. (US 6,720,572).

With regard to claims 3, 9-10, and 21, Shibata et al. disclose a light-emitting display device, (col. 3, line 50 et seq. and fig. 9) comprising:

- A light-emitting device 20 main body having a light output surface 23 and transferred (col. 7, lines 52-65);
- A transparent electrode 24 formed in a size larger than a size of the light output surface 23 so as to cover the light output surface 23 (col. 7, lines 9-17 and fig. 9);
- The light-emitting device main body is provided in the form of a chip 20 that includes a plurality of semiconductor layers (col. 1, lines 32-43), where the transparent electrode 24 is connected directly to a whole area of the light output surface (fig. 9);
- Shibata et al. do not disclose t transparent electrode 24 is connected to the light output surface through a contact layer. However, Jackson et al. disclose an OLED

a contact layer 95 formed of pentacene (Jackson col. 6, line 29 and fig. 9).

Jackson et al. teach the pentacene contact layer improves in current density (the turn-on voltage applying across the anode and cathode) of two orders of magnitude (Jackson col. 6, lines 36-47). Therefore, it would have been obvious at the time the invention was made to modify Shibata's device with the teaching of Jackson et al. to provide a contact layer in order to reduce the turn-on voltage.

Shibata et al. disclose the size of the transparent electrode 24 covering the organic semiconductor light output surface 23 is much larger (minute relative) the contact layer (fig. 9).

With regard to claims 4 and 20, Shibata et al. disclose the transparent electrode 24 provides direct connection 3a between a wiring 5 (data line) for supplying electrical power to the light-emitting device main body 20 and where the wiring is formed outside the region of the light output surface (fig. 8-9).

With regard to claim 11, Shibata et al. disclose the transparent electrode 24 is formed collectively on the light surfaces of the plurality of light-emitting device main bodies 20 (fig. 8 and 9).

With regard to claims 22-23, Shibata et al. disclose the contact metal is gold, which is a noble metal (col. 1, line 27).

Claims 5, 14, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al. (US 6,147,451) modified by Jackson et al. (US 6,720,572) as applied to claim 6 above, and further in view of Yoshitake et al. (US 6,900,473).

With regard to claims 5 and 37, Shibata et al. modified by Jackson et al. do not disclose the refractive index of the transparent electrode. However, Yoshitake et al. disclose the refractive index of the transparent electrode 17 (col. 7, lines 24-33) is lower than the refractive index of the semiconductor layer 13 including the light output surface (col. 8, line 33 and fig. 12) and is higher than the refractive index of a resin (col. 1, lines 31-32) provided on the upper side of the transparent electrode 17 (col. 3, lines 55-64). Yoshitake et al. teach the transparent electrode has a lower refractive index would reduce the internal reflection and has higher light output efficiency (Yoshitake col. 1, lines 28-39). Therefore, it would have been obvious to one of ordinary skill in the art to modify Shibata's device with the teaching of Jackson et al. and Yoshitake et al. to have a lower refractive index transparent electrode than the resin layer in order to reduce the internal reflection and have higher light output efficiency.

With regard to claims 14 and 35, in addition to the limitations disclosed in claims 3 and 4 above, Shibata et al. modified by Jackson et al. and Yoshitake et al. disclose an image display apparatus comprising:

- An image display surface formed by arranging a plurality of light-emitting device 120 on an apparatus substrate 100, each of the light-emitting device 120 comprising a light-emitting device main body 110 having a light output surface and transferred (TFT 101), and a transparent electrode 111 is formed in a size larger than a size of the light output surface so as to cover the light output surface and connected to whole area of the light output surface through a contact layer, where a size of the contact layer is less than the size of the light output surface (Shibata fig. 10).

- A contact metal 23 formed on the light output surface, where the size of the contact metal is less than a size of the light output surface (Yoshitake fig. 1b).

Claims 6-8, 12-13, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al. (US 6,147,451) modified by Jackson et al. (US 6,720,572) as applied to claim 6 above, and further in view of Yashiki (US 5,454,716).

With regard to claims 6 and 12, Shibata et al. do not disclose coating the light output surface with a conductive paste containing conductive particles dispersed in a light transmitting resin forms the transparent electrode. However, Yashiki discloses forming a conductive layer by coating the substrate with a layer of heat-cured resin embedded with conductive material such as metal particles (Yashiki col. 6, lines 32-36). Yashiki teaches the heat-cured conductive resin layer is stable; improves adhesion property to the device; and improves the image quality (Yashiki col. 6, lines 40-56). Therefore, it would have been obvious to one of ordinary skill in the art to modify Yoshitake's device with the teaching of Jackson et al. and Yashiki to provide a coating on the light output surface with a conductive layer containing conductive particles dispersed in a light transmitting resin in order produce stable; improves adhesion property to the device; and improves the image quality.

With regard to claims 7 and 13, Shibata et al. modified by Yashiki disclose the conductive particles scatter light emitted from the light output surface and diffuse the light from the transparent electrode (conductive layer) to an exterior of the device (Yashiki col. 6, lines 57-60).

With regard to claim 8, Shibata et al. modified by Yashiki disclose the conductive particles include ITO (col. 6, line 35 and col. 19 and line 17).

With regard to claims 24-25, Shibata et al. modified by Yashiki disclose the protective resin layer and a diffusion-preventing layer formed to cover the transparent electrode (conductive layer) to an exterior of the device (Yashiki col. 6, lines 40-56).

### ***Response to Arguments***

Applicant's arguments filed 7/20/06 have been fully considered but they are not persuasive.


- Applicant argues Shibata et al. do not disclose to provide a transparent electrode is connected to the light output surface through a contact layer or contact metal. However, Jackson discloses a contact layer formed on the light output surface and this meet the claim limitations of claim 3.
- Applicant argues that the conductive particles in Yashiki do not include ITO. However, Yashiki discloses the conductive particles include ITO (Yashiki col. 23, line 12; col. 24, lines 18-27; and col. 24, lines 33-41).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

Art Unit: 2814

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



WAI-SING LOUIE  
PRIMARY PATENT EXAMINER

Wsl  
December 6, 2006.